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Completing the four-body contributions to $\bar{B} \to X_s\gamma$ at NLO

Tuesday, September 10, 2019 3:00 PM (25 minutes)

The inlusive radiative $\bar{B} \to X_s\gamma$ decay constitutes an important pillar in the indirect search for new physics and allows to constrain the parameter space of many models.
In this talk we present the ongoing efforts in the computation of four-body contributions to the process $\bar{B} \to X_s\gamma$, namely those of $b \to s\bar{q}q\gamma$ at NLO in the strong coupling and the necessary complementing 5-particle cuts of the gluon-bremsstrahlung $b \to s\bar{q}q\gamma + g$.
Although these corrections are expected to be small, this computation formally completes the NLO contributions to $\bar{B} \to X_s\gamma$.
Since the anomalous dimensions are already computed to a sufficient order, the main tasks are the systematic generation of the 1-loop amplitude, the automation of the phase space integration, the infrared-regularization and finally the renormalization of the diagrams including the operator mixing.
The results obtained so far are shown and the further structure of the calculation is outlined.

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